

What is claimed is:

1. A film treatment apparatus, wherein a film of a coating solution coated on a substrate is gelatinized by using at least a second gas including a prescribed concentration of a vapor of prescribed solvent and a first gas, which comprises:

a chamber for placing said substrate coated with said film;

a first mass flow controller for supplying said chamber with said first gas;

a second mass flow controller for supplying said chamber with said second gas.

2. The film treatment apparatus according to claim 1, which further comprises:

exhaust means for exhausting said chamber; and

a chamber pressure control mechanism for detecting a pressure in said chamber, operating said exhaust means and controlling said pressure.

3. The film treatment apparatus according to claim 1, which further comprises:

a concentration sensor for measuring a concentration of said first gas in said chamber;

a pressure sensor for measuring a pressure in said chamber;

exhaust means for exhausting said chamber;

a chamber pressure control mechanism for operating said exhaust means on the basis of a measurement signal

from said pressure sensor and for controlling said pressure; and

5 a gas composition control mechanism for controlling said first or second mass flow controller on the basis of a measurement signal from said concentration sensor thereby keeping constant said concentration of said first gas.

4. The film treatment apparatus according to claim 3, which further comprises a coating unit for coating a coating solution on a substrate and forming a film on  
10 said substrate.

5. The film treatment apparatus according to claim 3, wherein said second mass flow controller controls said second gas.

15 6. The film treatment apparatus according to claim 1, which further comprises a mixer for mixing said first and second gases, wherein the mixed gas from said mixer is supplied into said chamber.

7. The film treatment apparatus according to claim 20 3, wherein said chamber pressure control mechanism controls said pressure by controlling a throttle of an exhaust valve of said exhaust mechanism on the basis of a measurement signal from said pressure sensor.

25 8. A film treatment method for gelatinizing a film of a coating solution coated on a substrate by using at least a second gas including a prescribed concentration of a vapor of prescribed solvent and a first gas, which

comprises the steps of:

a first step for forming said film of a coating solution on said substrate;

5 a second step for transporting said substrate with said film into a treatment chamber; and

a third step for treating said film by supplying said treatment chamber with said first and second gases each of which flow is controlled by a respective mass flow controller.

10 9. A film treatment method for gelatinizing a film of a coating solution coated on a substrate by using at least a second gas including a prescribed concentration of a vapor of prescribed solvent and a first gas, which comprises the steps of:

15 a first step for forming said film of a coating solution on said substrate in an atmosphere of said second gas;

a second step for transporting said substrate with said film into a treatment chamber; and

20 a third step for treating said film by supplying said treatment chamber with said first gas through a mass flow controller and supplying said treatment chamber with said second gas.